

**Abstract Title Page**  
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**Title:** Does access to high quality early education vary by state policy context?

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## **Abstract Body**

*Limit 4 pages single-spaced.*

### **Background / Context:**

*Description of prior research and its intellectual context.*

Research suggests that attending high quality, formal early childhood education (ECE) is associated with stronger cognitive and social-emotional skills, especially for low-income children (Yoshikawa et al., 2013). Yet at current funding levels, federally-funded programs like Head Start cannot serve all eligible children. Thus, state-level policies governing the accessibility and quality of alternative ECE programs for low-income families may be particularly important in filling this gap. This study capitalizes on variation in state policies that shape both children's access to formal ECE programs and the quality of those programs and on the random assignment design of the Head Start Impact Study (HSIS; Puma et al., 2010). It examines whether children's access to formal and high quality ECE, as well as the impact of random assignment to attend Head Start on such access, vary across policy characteristics that jointly demonstrate a state's commitment to ECE and approach to regulating ECE quality.

The story of ECE policy in the United States is one of great diversity. In the absence of federal policy governing accessibility and standards for non-Head Start ECE programs serving the vast majority of the nation's children, individual states have each developed their own definitions and regulations. But the need to empirically examine the nuances of policy approaches to ECE quality and accessibility is not diminished by the myriad ECE policies that have been implemented in recent years with this express purpose (Tout et al., 2010). On the contrary, these policies' varied approaches, coupled with the persistent low quality and inaccessibility of so many ECE programs despite these efforts, illustrates the need for further investigation into alternative policy approaches to raising quality (Tout et al., 2010). As such, examining the associations of nuanced state policy characteristics with low income families' access to formal and high quality ECE is critical.

### **Purpose / Objective / Research Question / Focus of Study:**

*Description of the focus of the research.*

In this study, we leverage state policy variation and the random assignment design of the HSIS to address the following research questions: (1) Are state policy characteristics associated with variation in children's likelihood to enroll in formal and high quality ECE within the control group? (2) Are state policy characteristics similarly associated with variation in children's likelihood to enroll in formal and high quality ECE within the Head Start group? (3) Are state policy characteristics similarly associated with variation in Head Start impacts on children's enrollment in formal ECE and high quality ECE? (4) Which state policy characteristics are most strongly related to children's enrollment in formal and high quality ECE and to Head Start's impact on this behavior?

### **Setting:**

*Description of the research location.*

The HSIS was designed to be nationally representative of 3- and 4-year-olds attending Head Start programs in the United States and included children in 22 states. Observations of classroom quality occurred in the child's primary ECE setting, including Head Start centers, other public and private center-based care facilities, and family child care homes. Parent interviews were conducted in the participant's home.

### **Population / Participants / Subjects:**

*Description of the participants in the study: who, how many, key features, or characteristics.*

This research uses data from the HSIS, which includes 4,440 3- and 4-year-old children who were randomly assigned off a waitlist to either receive an offer to participate in Head Start or to the control group. Children initially applied to 351 Head Start programs across 81 Head Start grantees. Children in random assignment Head Start centers that did not have at least one child randomly assigned to both the Head Start and the control conditions are excluded from the current study, resulting in an analytic sample of 4,385 children (2,115 assigned to Head Start and 1,236 assigned to control) nested in 340 Head Start random assignment centers in 22 states.

### **Intervention / Program / Practice:**

*Description of the intervention, program, or practice, including details of administration and duration.*

Children were randomly assigned to receive Head Start services or to a control group. The control group did not have access to Head Start; instead, some children in the control group enrolled in other center-based or family child care programs while others stayed at home with a parent or other adult (collectively referred to as own-home care). As Head Start is based on a "whole child" model, children randomly assigned to the Head Start group had access to a set of comprehensive services including preschool education, medical, dental, and mental health care, nutrition services, and parental involvement activities.

### **Research Design:**

*Description of the research design.*

Random assignment occurred prior to the beginning of the 2002-03 school year. Children were randomly assigned within the Head Start center to which they applied. HSIS data collection began during the fall of 2002, and parents interviews and classroom quality observations were conducted during the winter and spring of 2003.

### **Data Collection and Analysis:**

*Description of the methods for collecting and analyzing data.*

***ECE type and quality.*** A child was determined to be enrolled in an ECE program primarily based on parent reports of the child's primary ECE setting during the spring of 2003. Two standardized observational tools were used to assess the quality of formal ECE settings: the Early Childhood Environment Rating Scale-Revised (ECERS-R; Harms, Clifford, & Cryer, 1998) and the Family Day Care Rating Scale (FDCRS; Harms & Clifford, 1989). The ECERS-R and FDCRS are analogous observational tools that are used to measure quality in classrooms in center-based early childhood programs and family child care settings, respectively. Items and subscales assess the quality of space, materials, and experiences including language interactions

between teachers and children. Classrooms scoring a 5 or higher (out of 7) were considered to be high quality (Zaslow et al., 2010). Thus, the primary dependent variable used in this study is an unordered categorical variable with five mutually exclusive and collectively exhaustive categories that reflect the type and quality of the child's primary ECE setting: (1) Own-home care, (2) In formal ECE that is high quality, (3) In formal ECE that is low quality, (4) In formal ECE but the quality of their classroom was not observed, and (5) Child's type of care setting and observed classroom quality are missing. Future analyses will also include a second dependent variable that provides more detailed information about the type of formal ECE that children attend; this variable will divide high, low, and missing quality categories by ECE type (Head Start, non-Head Start center, and family child care home), resulting in a nine category variable (we combine all family child care quality categories into one because cell sizes would otherwise be too small).

**State policy characteristics.** Dichotomous indicators denoting the presence of a state-funded pre-K program and state funding devoted to Head Start programs, as well as the average Head Start teacher's salary, were obtained from the National Institute for Early Education Research's 2003 *State Preschool Yearbook* (Barnett, Robins, Hustedt, & Shulman, 2003). A dichotomous indicator for the presence of a statewide Quality Rating and Improvement System (QRIS) was generated based on data from the *Compendium of quality rating systems and evaluations* (Tout et al., 2010), and the voting record of each state's U.S. congressional delegation on children's issues was obtained from Children's Defense Fund's 2001 *Nonpartisan Congressional Scorecard* (Children's Defense Fund Action Council, 2002). Future analyses will also include measures of states' nuanced policy approaches to regulating ECE quality that we will derive from primary documentation of 2002 child care licensing regulations using a coding scheme similar to that used by Connors and Morris (2014).

**Analytic Strategy.** A series of multinomial logistic regression models were conducted separately in within subsamples of children in states with differing policy characteristics. These analyses allow us to examine non-causal variation across state policy contexts of the causal impacts of the offer of Head Start on enrollment in formal and high quality ECE. For each policy characteristic, the full sample will be split in two: either based on the presence or absence of dichotomous policy characteristics, or at the sample median for continuous policy measures. Each multinomial logistic regression model was estimated as follows:

$$\Pr(Y) = \beta_0 + \beta_1 T + \sum_{k=1}^K \beta_{2k} X_k + e$$

where  $\Pr(Y)$  is the predicted probability of being in each category of the categorical outcome of interest,  $T$  equals 1 if the child was randomly assigned to Head Start and 0 otherwise,  $X_k$  are a series of Head Start center fixed effects to account for the unit of randomization, and  $e$  is a random error. Own-home care serves as the reference group in each multinomial logit model. In a pure random-assignment design, unadjusted impacts provide unbiased estimates of treatment impacts. In some cases, baseline covariates are included to reduce the standard error (thus, increasing precision) of the impact estimates. In the current study, it was deemed that there were few, if any, baseline covariates that would serve that purpose, given an outcome of ECE type and quality. Therefore, covariates were not included in these models and results can be considered conservative.

Post-hoc analyses of each model will be used to compare the predicted likelihoods of being in each of the ECE type and quality categories across random assignment status. Within each

subsample, Head Start versus control group differences can be interpreted as causal estimates of the impact of random assignment to Head Start within that policy context. However, causal claims cannot be made about differences across policy contexts. Statistical significance of the non-causal differences in Head Start impacts across policy characteristic subgroups will be tested using a *z*-statistic calculation (Paternoster, Brame, Mazerolle, & Piquero, 1998). In future analyses, statistical significance of variation in Head Start impacts across policy characteristics will also be tested by adding an interaction between treatment status and policy characteristic to models conducted in the full analytic sample.

## **Findings / Results:**

*Description of the main findings with specific details.*

Descriptive statistics reveal that many more children in the Head Start group than in the control group were enrolled in formal ECE of any quality, and of those in formal ECE, were more likely to be enrolled in high quality ECE (please insert Table 1 here). In addition, there is great variability in states' policy characteristics and correlations among these characteristics range in magnitude from .01 to .53 (please insert Tables 2 and 3 here).

Post hoc analyses of multinomial logit model results indicate that children in the control group are generally more likely to enroll in formal ECE in states that show a stronger commitment to ECE—particularly in those that have state-funded pre-K, frequently vote to support children's issues, and where the average Head Start teacher's salary is high. Children in both the Head Start and control groups are generally more likely to enroll in high quality ECE in those same states. Surprisingly, children in the Head Start group are less likely to enroll in high quality ECE in states with a QRIS (please insert Table 4 here). In addition, we find that Head Start's impact on enrolling in high quality ECE, compared to own-home care, is *smaller* in states that have state-funded pre-K, frequently vote to support children's issues, and where the average Head Start teacher's salary is high—that is, states that show a stronger commitment to ECE (please insert Table 5 here). Results are similar for Head Start's impact on enrollment in formal ECE.

## **Conclusions:**

*Description of conclusions, recommendations, and limitations based on findings.*

Consistent with expectations, our preliminary findings suggest that, in general, a state's commitment to ECE is related to low-income families' increased access to formal and high quality ECE when denied access to Head Start, and to smaller impacts of Head Start on enrollment in formal and high quality ECE. Future analyses will include finer-grain measures of states' ECE policies and children's enrollment patterns in order to more deeply explore variation across nuanced state policy approaches, in addition to a state's general commitment.

Thus, findings from this study will shed light on the role of state policies in low-income families' access to formal and high quality ECE, and may help to explain state-level variation in Head Start's impacts on such access. This information can inform both state-level policy and federal Head Start policy on how to become more effective and efficient by (1) understanding the types of state policies most closely associated with low-income families' access to formal and high quality ECE and (2) understanding the kinds of state policy contexts in which Head Start resources can be focused to provide a service not otherwise available to the population it serves.

## Appendices

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### Appendix A. References

*References are to be in APA version 6 format.*

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## Appendix B. Tables and Figures

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Table 1. *Observed Percent of Children Randomized to Head Start and the Control group in Each Type, Quality, and Missingness Category*

	Head Start (%)	Control (%)	Difference between Head Start and Control Group
Own-Home Care	7.26	34.65	-27.37
Formal ECE			
Low Quality	27.65	15.64	12.01
High Quality	45.61	11.47	34.14
Missing Quality Observation	10.51	17.98	-7.47
Missing ECE Type & Quality Observation	8.96	20.27	-11.30

Table 2. *Descriptive Statistics of State Policy Characteristics Included in Preliminary Analyses*

	N	%	Mean	S.D.	Min	Med	Max
State-funded pre-K program	22	81					
Statewide QRIS	22	14					
State funding devoted to Head Start programs	22	31					
Average Head Start teacher's salary (\$)	22		21,775	2,784	17,850	20,558	27,892
Congressional voting record (%)	22		49	15	20	46	88

Table 3. *Correlations Among State Policy Characteristics Included in Preliminary Analyses*

	1	2	3	4	5
1. State-funded pre-K program	-				
2. Statewide QRIS	0.19	-			
3. State funding devoted to Head Start programs	0.07	0.01	-		
4. Average Head Start teacher's salary	0.46*	-0.23	-0.17	-	
5. Congressional voting record	0.31†	-0.42†	0.03	0.53*	-

†  $p < .10$ , \*  $p < .05$

Table 4. *Percentage point (PP) differences in the likelihood of attending formal and high quality ECE by state policy characteristics*

	State pre-K	Statewide QRIS	Congressional Voting Record	State-funded Head Start	Head Start Teacher Salary
Within Head Start group, PP difference in enrollment in:					
Formal ECE	20	0	1	-1	0
High Quality Formal ECE	13	-33	27	5	20
Within control group, PP difference in enrollment in:					
Formal ECE	31	3	17	-6	17
High Quality Formal ECE	10	-5	17	-3	17

*Note:* Positive values indicate that children are more likely to enroll in formal or high quality ECE in states where the policy characteristic is present or above the median.

Table 5. *Comparisons of Head Start's impact on enrollment in high quality ECE across state policy characteristics*

	<i>b</i>	SE	<i>z</i>
State pre-K			
Yes	3.63	0.16	7.12 ***
No	5.19	0.56	
Statewide QRIS			
Yes	3.64	0.55	0.60
No	3.78	0.16	
Congressional Voting Record			
Above median	3.15	0.21	19.30 ***
Below median	4.52	0.23	
State-funded Head Start			
Yes	4.12	0.33	0.73
No	3.80	0.18	
Head Start Teacher Salary			
Above median	3.03	0.21	26.91 ***
Below median	4.65	0.24	

*Notes:* \*\*\* $p < .001$ ; Own-home care is the reference group.